

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Akinori MINAMI, et al.

Appln. No.: Not Yet Assigned

Confirmation No.: Not Yet Assigned

Group Art Unit: Not Yet Assigned

Filed: December 06, 2001

Examiner: Not Yet Assigned

For: POWDERS-AFFIXED NONWOVEN FABRIC, PROCESS FOR MANUFACTURING SAME,  
AND SHEET MATERIAL CONTAINING SAME

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

**IN THE SPECIFICATION:**

**Page 3, please delete the second full paragraph and replace it with the following new paragraph:**

In accordance with the present invention, there is provided a powders-affixed nonwoven fabric prepared from a fiber web comprising fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in the powders-containing fiber web, the powders-containing fiber web being formed by a method other than a wet-laid method.

**Page 4, please delete the first full paragraph and replace it with the following new paragraph:**

Accordingly, the present invention also relates to a process for manufacturing a powders-affixed nonwoven fabric comprising the steps of: ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fiber capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a

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compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials; collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; and affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web to obtain the powders-affixed nonwoven fabric.

**Please delete the paragraph bridging pages 4 and 5 and replace it with the following new paragraph:**

In accordance with the present invention, there is also provided a sheet material comprising at least one layer of a powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in the fiber web, the powders-containing fiber web being formed by a method other than a wet-laid method.

**Page 5, please delete the second full paragraph and replace it with the following new paragraph:**

In accordance with the present invention, there is also provided a process for manufacturing a sheet material comprising the steps of:  
Ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials; collecting the dispersed fine short fibers and the powder materials to form a powder-containing fiber web; and affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web, and at the same time bonding a layer free of the powder materials, to obtain the sheet material containing a powders-affixed nonwoven fabric.

**IN THE CLAIMS:**

**Please enter the following amended claims:**

1. (amended)A powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in

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a dispersed state in said powders-containing fiber web, said powders-containing fiber web being formed by a method other than a wet-laid method.

7. (amended)A process for manufacturing a powders-affixed nonwoven fabric comprising the steps of: ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials; collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; and affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web to obtain the powders-affixed nonwoven fabric.

12. (amended)A sheet material comprising at least one layer of a powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in said powders-containing fiber web, said powders-containing fiber web being formed by a method other than a wet-laid method.

14. (amended)A process for manufacturing a sheet material comprising the steps of:

ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials;

collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; and affixing the powder materials, while forming a nonwoven fabric from the powders-

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containing, and at the same time bonding a layer free of the powder materials, to obtain the sheet material containing a powders-affixed nonwoven fabric.

**IN THE ABSTRACT:**

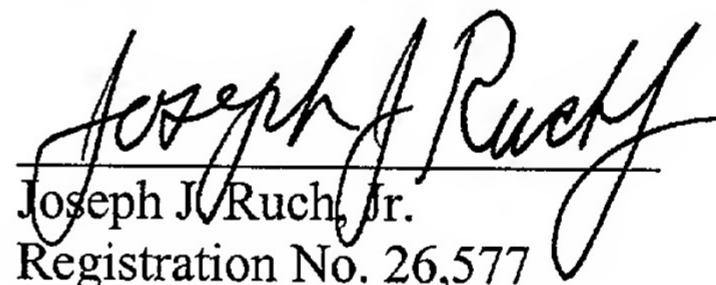
**Please delete the present Abstract of the Disclosure and replace it with the following new Abstract of the Disclosure.**

Disclosed is a powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4 µm or less and a fiber length of 3 mm or less in a dispersed state in the powders-containing fiber web, the powders-containing fiber web being formed by a method other than a wet-laid method. Further, a process for manufacturing the powders-affixed nonwoven fabric, and a sheet material comprising the powders-affixed nonwoven fabric are also disclosed.

**REMARKS**

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,

  
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**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE SPECIFICATION:**

**The specification is changed as follows:**

**Page 3, second full paragraph:**

In accordance with the present invention, there is provided a powders-affixed nonwoven fabric prepared from a fiber web comprising fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in the powders-containing fiber web, the powders-containing and powder materials affixed to the fiber web being formed by a method other than a wet-laid method.

**Page 4, first full paragraph:**

Accordingly, the present invention also relates to a process for manufacturing a powders-affixed nonwoven fabric comprising the steps of:

ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fiber capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials;

collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; and bonding the powders-containing fiber web, and affixing the powder materials thereto to obtain the powders-affixed nonwoven fabric affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web to obtain the powders-affixed nonwoven fabric.

**The paragraph bridging pages 4 and 5:**

In accordance with the present invention, there is also provided a sheet material comprising at least one layer of a powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in the fiber web, and powder materials affixed to the powders-containing the fiber web being formed by a method other than a wet-laid method.

**Page 5, second full paragraph:**

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In accordance with the present invention, there is also provided a process for manufacturing a sheet material comprising the steps of:

Ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials; collecting the dispersed fine short fibers and the powder materials to form a powder-containing fiber web; and ~~bonding the powders containing fiber web, affixing the powder materials thereto, and at the same time bonding a layer free of the powder materials to obtain the sheet material containing a powders-affixed nonwoven fabrics affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web, and at the same time bonding a layer free of the powder materials, to obtain the sheet material containing a powders-affixed nonwoven fabric.~~

**IN THE CLAIMS:**

**The claims are amended as follows:**

1. (amended) A powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in said powders-containing fiber web, and powder materials affixed to said powders-containing fiber web being formed by a method other than a wet-laid method.
  
7. (amended) A process for manufacturing a powders-affixed nonwoven fabric comprising the steps of: ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials;

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collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; ~~and bonding the powders-containing fiber web, and affixing the powder materials, while forming a nonwoven fabric from the powders-containing fiber web thereto~~ to obtain the powders-affixed nonwoven fabric.

12. (amended) A sheet material comprising at least one layer of a powders-affixed nonwoven fabric prepared from a fiber web comprising powder materials and fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less in a dispersed state in said powders-containing fiber web, said powders-containing materials affixed to said fiber web being formed by a method other than a wet-laid method.

14. (amended) A process for manufacturing a sheet material comprising the steps of:

ejecting aggregates of fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or a group of the aggregates, and/or mechanically dividable fibers capable of generating fine short fibers having a fiber diameter of 4  $\mu\text{m}$  or less and a fiber length of 3 mm or less, or aggregates of the mechanically dividable fibers, together with powder materials, from a nozzle into a gas by an action of a compressed gas, to thereby divide the aggregates of the fine short fibers or the group thereof into the fine short fibers, and/or divide the mechanically dividable fibers or the aggregates thereof into the fine short fibers, and disperse the resulting fine short fibers and the powder materials;  
collecting the dispersed fine short fibers and the powder materials to form a powders-containing fiber web; ~~and bonding the powders-containing fiber web, affixing the powder materials thereto, while forming a nonwoven fabric from the powders-containing,~~ and at the same time bonding a layer free of the powder materials, to obtain the sheet material containing a powders-affixed nonwoven fabric.